

① Model Answer key. Solution QP Code: 65509

Q.1. True/False

- i) True (02)
- ii) False: endless loop in network is called looping.
- iii) True
- iv) False: The difference between maximum payoff & all corresponding payoff called as opportunity loss.
- v) TRUE:

Q.1 B.

- i) Activities taking place at same time & same location are known as concurrent activity (02)
- ii) $t_e = \frac{t_o + 4t_m + t_p}{6}$ (02)
- iii) maximin = minimax $\neq 0$ (02 marks)
- iv) pure & mixed strategy (02 marks)
- v) To determine the various alternatives or course of action from which the final decision is to be made. (02 marks)

Q.2.

- a. i) merge event, burst event, looping, dangling, redundancy (each one mark)
- ii project duration = 67 — 1 mark
 critical path = 1 → 2 → 3 → 5 → 6 — 1 mark
 network ————— 3 mark.

Q.2 b)

- i. Step by step procedure — (05 marks)
- ii. Rules to construct network — (at least 5 Rules) — 05 marks

Q.2. C.

- Crashing Explanation — 04 marks
- Time cost optimization algorithm — 06 marks

Q.3. a

- i) - Principle of Dominance — 02 marks
- Properties — 02 marks

ii)
$$\begin{bmatrix} -5 & 10 & 20 \\ 5 & -10 & -10 \\ 5 & -20 & 20 \end{bmatrix}$$
 IIIrd row is dominated by IInd row
 IIIrd col is dominated by IInd col

Best strategies are $A = \left\{ \frac{1}{2}, \frac{1}{2}, 0 \right\}$ $B = \left\{ \frac{2}{3}, \frac{1}{3}, 0 \right\}$

value of game = 0.

Q.2.

b)

i) proof → 0.5 marks

ii) 2x2 game graphical procedure → 0.5 marks

2

Q.3 c)

$$x_1 = \frac{v_{22} - v_{21}}{(v_{11} + v_{22}) - (v_{12} + v_{21})}, \quad x_2 = 1 - x_1, \quad y = \frac{v_{11}v_{22} - v_{21}v_{12}}{(v_{11} + v_{22}) - (v_{21} + v_{12})}$$

$$y_1 = \frac{v_{22} - v_{12}}{(v_{11} + v_{22}) - (v_{21} + v_{12})}, \quad y_2 = 1 - y_1, \quad \text{payoff } \begin{bmatrix} v_{11} & v_{12} \\ v_{21} & v_{22} \end{bmatrix}$$

— All proof 10 marks

Q.4 a)

i) EMV & EOL Defⁿ (2 1/2 marks each)

ii) Difference - (5 mark, at least three)

Q.4 b)

i) (02 mark Laplace + ~~03 mark Hurwicz~~)

ii) maximin = -3000 (S₁)⁽²⁾, minimax = 1000 (S₂)⁽²⁾ - (0.5 marks)
pay off matrix - (4)

Q.4 c) 10 marks brief explanation

Q.5 a)

i) (03 marks CPM, 03 mark Total Float)

project duration = 15 | 1 → 4 → 8 → 9 (critical path)

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|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Activity | 1-2 | 1-4 | 1-7 | 2-3 | 3-6 | 4-5 | 4-8 | 5-6 | 6-9 | 7-8 | 8-9 |
| TF | 5 | 0 | 6 | 5 | 5 | 1 | 0 | 1 | 1 | 6 | 0 |

ii) Updating - 04 marks

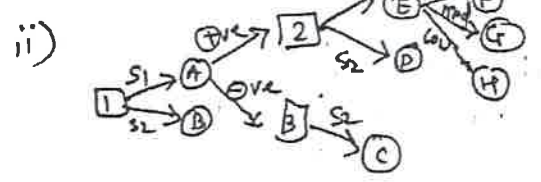
Q.5 b)

i) - minimax - maximin criteria - 03 marks
- Example - 02 marks

ii) $\lambda \in (-1, 2)$,

Q.5 c)

i) Savage minimax criteria (procedure) - 07 marks.



EMV(A) = 98,500
 Optimal initial course of action is
 best market.
 (07 marks)